Severe local storms, July, 1931—Continued

Place	Date	Time	Width of path, yards [1]	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Tuckerton, Pa.	24				$15,000	Electrical	No details reported	Official, U. S. Weather Bureau.
Maxwell (near), N. Mex.	25		3 mi.		3,000	Hail	Crops hurt; path 8 miles	Do.
Middle Hope and Marlboro, N. Y.	27	5:45 p. m.	1,320		2,000	Wind squall and rain.	Vineyards damaged	Do.
Moorhead, Minn., to Fargo, N. Dak.	27				12,000	Wind and hail	Crops and buildings damaged	Do.
Ganado to Fort Defiance, Ariz.	28	6 p. m.	4 mi.	3	275,000	Hail and rain	Severe loss to crops and stock; buildings and irrigation dam damaged.	Do.
Bernville, Pa.	29				10,000	Electrical	No details reported	Do.
Colchester and Winooski Valley, Vt.	29					Wind and rain	Trees and weak buildings blown down; crops hurt.	Do.
Lindrith, N. Mex.	30					Hail and rain	Corn and bean crops considerably damaged	Do.
Pomeroy (near), Wash.	30					Hail	Standing grain damaged 50 per cent	Do.
Fillmore and Saline Counties, Nebr.	31	2-3 p. m.	2 mi.		10,000	do	Damage to crops estimated at 50 per cent in places; path 16 miles long.	Do.
Dallas County, Iowa	31	2:30 p. m.			4,100	Wind and hail	Buildings and crops damaged	Do.
Harmony, Nebr.	31	7 p. m.				Small tornado	A few outbuildings destroyed	Do.

[1] "Mi." signifies miles instead of yards.

RIVERS AND FLOODS

(River and Flood Division, Montrose W. Hayes in charge)

By RICHMOND T. ZOCH

The only overflows of consequence in the principal rivers of the United States during July, 1931, were those in the Pascagoula and Pearl River systems of Mississippi. These floods caused damage to the extent of $165,000, most of which was the result of 25,000 acres of prospective crops being inundated. The money value of property saved by warnings was estimated at $5,000.

The usual table of flood stages which occurred at Weather Bureau gaging stations appears herewith. No damage was reported at any of these places except that mentioned in the preceding paragraph.

Heavy local rains caused numerous overflows in creeks and small streams where it is impracticable to maintain warning service. Damages were reported (but the extent or amount was not given) at Bremen, Ohio, on July 2, at Cawker City, Kans., on July 6, in central Vermont on July 22, at Portsmouth, Ohio, on July 23, at Pocatello, Idaho, on July 29, and at Helena, Mont., and Cheyenne, Wyo., on July 30. On July 9 severe local rains caused floods in small streams in and around Scranton, Pa. The damage was estimated at $50,000. On July 14 a severe storm caused floods in the small streams in and around Philadelphia, Pa. The damage was estimated at $1,000,000.

The Mississippi River and nearly all of its tributaries remain at very low stages.

Table of flood stages in July, 1931

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
	Feet			*Feet*	
Susquehanna: Oneonta, N. Y.	12	11	11	12.0	11
Neuse: Smithfield, N. C.	14	5	5	14.2	5
Santee: Rimini, S. C.	12	13	13	12.2	13
EAST GULF OF MEXICO DRAINAGE					
Chickasawhay: Enterprise, Miss.	21	28	30	22.1	29
Pearl: Jackson, Miss.	20	28	31	22.3	31
MISSISSIPPI SYSTEM					
Red Basin.					
Sulphur: Ringo Crossing, Tex.	20	26	26	20.4	26
WEST GULF OF MEXICO DRAINAGE					
Rio Grande:					
Riogrande, Tex.	21	19	19	23.5	19
San Benito, Tex.	23	20	22	24.7	21
Brownsville, Tex.	18	21	22	18.5	22
GULF OF CALIFORNIA DRAINAGE					
Colorado: Parker, Ariz.	7	1	1	7.0	1
		8	14	7.2	9–11

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

By the Marine Division, W. F. MCDONALD in charge

NORTH ATLANTIC OCEAN

By W. F. MCDONALD

The average barometric pressures over the Atlantic and its adjacent coasts during July, 1931, did not depart greatly from the monthly normals except over Iceland, the British Isles, and Scandinavia, where the barometer averaged considerably below normal. From Halifax to the Spanish Peninsula there was a slight excess in average air pressure, and a slight deficiency from the Caribbean region to Bermuda and New England. (See Table 1.)

These conditions represent a displacement northeastward of the Atlantic centers of action during July, with some intensification of the usually inactive center of low pressure over the northeastern Atlantic, which is reflected in the fact that the British Isles experienced unusually cloudy and unsettled weather.[1] The pressure over southern Greenland (Julianehaab) continued above normal though not up to the extraordinary height shown by average pressure in the preceding month when the mean barometer was 30.07 inches.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, July, 1931*

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland [1]	29.94		30.32	9th	29.53	1st.
Reykjavik, Iceland [1]	29.71	−0.12	30.10	7th	29.36	23d.
Aberdeen, Scotland [2]	29.68	−.24	[3] 30.01	1st	[3] 29.33	27th.
Valentia, Ireland [2]	29.83	−.18	[3] 30.20	21st	[3] 29.52	14th.
Lisbon, Portugal [1]	30.07	+.05	30.30	25th	29.94	22d.
Madeira [1]	30.11	−.02			29.95	22d.
Horta, Azores [1]	30.34	+.07	30.52	1st	30.08	10th.
Belle Isle, Newfoundland [1]	29.83	−.04	30.38	8th	29.38	5th.
Halifax, Nova Scotia [1]	29.96	+.01	30.26	10th	29.62	31st.
Nantucket [2]	29.93	−.05	30.13	13th	29.52	22d.
Hatteras [2]	29.96	−.05	30.16	14th	29.75	22d.
Bermuda [1]	30.09	−.04	30.28	25th	29.86	4th.
Turks Island [1]	30.05	−.02	30.18	12th	29.96	1st.
Key West [1]	29.97	−.06	30.10	20th	29.85	9th.
New Orleans [2]	29.96	−.04	30.15	30th	29.73	15th.

[1] All data based on a. m. observations only, with departure computed from best available normals related to time of observation.
[2] Corrected 24-hour means, based on more than one observation daily.
[3] Highest and lowest from one observation daily (a. m. only).

[1] Monthly Supplement to the Daily Weather Report. British Meteorological Office July, 1931.

Reports in hand indicate that gales were experienced on only a few days in the month. The most disturbed conditions occurred over the main northern steamship routes east of longitude 45° W. during the latter half of the month, with three ships reporting winds of gale force in that area on the 16th and three on the 20th or 21st. These spells of mildly stormy conditions were the result of the development of an extensive low-pressure belt reaching from Labrador to the North Sea with a stable ridge of high pressure extending from Florida to Spain and crested well northward over the Azores.

The French steamship *Nevada* (captain, F. Bougouin; observer, LeFichoux) on the 14th encountered a small, sharp depression at the western end of the English Channel, in which the barometer dropped between noon and 7 p. m. from a reading of 29.9 to 29.1 inches, after which the pressure rose rapidly, the depression being accompanied by wind rising briefly to force 10, and shifting from east-northeast to west-northwest. This disturbance is clearly identified in the daily weather maps of the region, which show it to have traveled northeastward, retaining its central depth but increasing in area, though apparently not producing storm winds of any great extent.

A disturbance resembling in some of its characters a mild tropical cyclone originated in the western Gulf of Mexico on the 14th and caused winds of force 8 to 11 near the Louisiana coast as it progressed northeastward on the 14th and 15th. The tanker *W. C. Teagle* (captain, W. Doyle; observer, C. Dwyer) encountered this disturbance en route from Galveston through the Florida Straits, on the afternoon of the 14th, about latitude 28° N. and longitude 91° W. The barometer fell rather sharply about two-tenths of an inch, reaching the lowest point at 4:30 p. m., when the ship's weather journal states that "the wind was ESE., force 11, with driving rain squalls and the air full of spray. Kept the vessel head-on at reduced speed. At 6 p. m. the wind was SE., force 10, with barometer pumping between 29.72 and 29.78." Southeast gale and rain continued throughout most of the night of the 14th–15th, but the wind changed to south by 7 a. m. and diminished to force 6, with barometer returning to approximately the same height as at the beginning of the storm. The intensity of the disturbance may be judged, however, by the remark in the storm log that "the vessel was set north about 50 miles by wind and sea."

A wind of moderate gale force was experienced by the steamship *LaPlaya* in the Gulf of Honduras on the 23d, but this appears to have been the result of a local strengthening of the trade wind rather than a developing tropical disturbance.

Fogs were as prevalent as usual for July over the main steamer routes from North Atlantic ports eastward and northeastward, being most widespread between the 5th and 10th and again from the 22d to 28th, during which periods fog blanketed most of the Atlantic area north of latitude 40° and eastward to the vicinity of longitude 20° W., with a considerable extension southward along the American coast to the latitude of Hatteras from the 7th to 9th. There was another spell of extensive fogs over the mid-Atlantic between the 15th and 19th, but American waters were quite free between the 17th and 21st and again in the last five days of the month.

Three successful airplane crossings of the Atlantic were attempted during July. The first plane (Magyar and Endres) left the American coast on the 15th, landing near Budapest on the 16th. Two planes (Boardman and Polando in one, Herndon and Pangborn in the other) left simultaneously on the 28th, the first named making a nonstop flight from New York to Constantinople by which they claimed to have established a new mark for distance, in a traveling time of somewhat over 49 hours of flight. The second plane landed safely at Berlin.

It may be noted here that these flights were favored by stable barometric situations over the Atlantic, marked in each case by a well-developed ridge of high pressure extending completely across the ocean with long, almost straight, isobars parallel to the line of flight, creating steady tail winds over practically the entire stretch of ocean route. Charts VIII to XI reproduce the weather maps of the North Atlantic on July 15, 16, 28, and 29, for their interest in connection with these trans Atlantic flights.

OCEAN GALES AND STORMS, JULY, 1931

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Inches*					
Lochkatrine, Br. M. S.	Panama Canal.	Liverpool	27 56 N	58 16 W	July 1	4 p., 1	July 1	30.02	SSE.	SSE, 8	SSE.	SSE, 8	Steady.
Narragansett, Br. M. S.	Liverpool	Panama Canal.	48 48 N	18 33 W	July 3	6 p., 3	July 4	29.85	WSW.	W, 6	WSW.	WNW, 8	WSW–WNW.
Nevada, Fr. S. S.	Havre	do	49 00 N	2 00 W	July 14	7 p., 14	July 15	29.00	ESE.	NNW, 10	NW.	NNW, 10	
W. C. Teagle, Am. S. S.	Galveston	Cape Henry	27 44 N	90 42 W	do	4 p., 14	do	29.70	ESE.	ESE, 11	SSE.	ESE, 11	ESE-S.
Ambridge, Am. S. S.	Antwerp	New York	49 04 N	39 07 W	July 16	5 a., 16	July 17	29.78	WSW.	SSW	SW.	WSW, 9	SSW-WSW.
Gonzenheim, Ger. S. S.	Rotterdam	do	50 40 N	23 02 W	do	11 p., 16	do	29.89	W	W, 8	NW.	W, 8	WSW-WNW.
Do.	do	do	49 36 N	39 52 W	July 19	6 a., 20	July 20	29.81	S.	SSW, 9	WSW.	SSW, 9	SSW-WSW.
City of Alton, Am. S. S.	do	do	50 30 N	15 46 W	July 16	Mid., 16	July 17	29.96	W	W	SW.	SW, 8	W-SW.
Do.	do	do	48 45 N	38 25 W	July 20	2 a., 21	July 21	29.76	SW.	SW	WNW.	W, 8	SW-WNW.
Delfshaven, Du. S. S.	Antwerp	Baltimore	42 37 N	46 37 W	July 18	7 a., 19	July 19	30.08	S.	S, 9	SW.	SW, 9	S-SW.
Bird City, Am. S. S.	Copenhagen	Portland, Me.	56 55 N	30 00 W	July 21	Mid., 21	July 22	29.36	W	W, 5	WSW.	W, 8	
La Playa, Pan. S. S.	Mobile	Puerto Cortez.	17 16 N	87 20 W	July 23	6 p., 23	July 24	29.78	ENE.	NE, 7	ENE.	ENE, 8	Steady.
Collamer, Am. S. S.	Bordeaux	New York	47 21 N	48 12 W	July 31	7 p., 31	Aug. 1	29.25	S.	SSW, 9	WSW.	SSW, 9	S-WSW.
NORTH PACIFIC OCEAN													
Golden Sun, Am. S. S.	San Francisco	Yokohama	44 00 N	151 30 W	July 2	6 p., 2	July 2	30.16	SSE.	SSW, 8	SSW.	SSW, 8	SSE-SSW.
Shintoku Maru, Jap. Bk.	Kobe	Honolulu	46 43 N	164 10 E	July 2	2 p., 3	July 4	29.79	SE.	SE, 7	E.	SE, 8	Steady.
Makiki, Am. S. S.	Hilo	San Francisco	36 00 N	127 00 W	do	5 a., 4	do	29.84	N.	NNW, 6	NNW.	NNW, 8	Do.
Emidio, Am. S. S.	San Pedro	Vancouver	39 40 N	124 24 W	July 3	2 p., 3	July 3	29.86	NNW.	NNW, 7	NNW.	NW, 8	
Challenger, Am. M. S.	Balboa	San Diego	16 20 N	99 57 W	do		do	29.55	E.	E, 9	W.	E, 9	E-W.
Ogura Maru, Jap. M. S.	Yokohama	Los Angeles	42 43 N	177 22 W	July 7	4 p., 8	July 8	29.42	ESE.	NNE, 8	N.	NE, 8	
Hanover, Am. S. S.	San Pedro	Kobe	32 35 N	140 25 E	July 9	11 a., 9	July 9	29.66	W	W, 8	W.	W, 8	Steady.
San Diego Maru, Jap. M. S.	Yokohama	San Pedro	41 46 N	165 34 W	do	8 p., 9	July 10	29.33	E.	E, 8	E.	E, 8	Do.
Akagisan Maru, Jap. M. S.	do	San Francisco	42 47 N	157 50 E	do	Noon, 9	July 11	29.60	E.	NNE, 2	ENE.	ENE, 8	E-NNE.
Charcas, Am. S. S.	Buenaventura	San Pedro	15 00 N	96 00 W	July 10	2 p., 10	July 10	29.66	N.	N, 7	SE.	N, 8	
Atlantic, Am. S. S.	San Francisco	Panama	18 51 N	104 42 W	July 21	10 a., 21	July 21	29.84	SE.	SSE, 5	SE.	SE, 8	SE-SSE.
Effna, Am. S. S.	San Pedro	do	[1]15 00 N	[1]97 30 W	July 26	7 a., 26	July 26	29.63	NE.	NE	SSE.	NNE, 8	
Nora, Am. S. S.	do	Balboa	16 03 N	98 48 W	do	1 p., 26	do	29.67	ENE.	ENE, 7	SE.	E, 8	E-ESE.

[1] Position approximate.